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ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST.

Committee for Coordination of Investigations
of the Lower Mekong Basin.
(Cambodia, Laos, Thailand and the Republic of Viet-Nam)

CAMBODIA, LAOS, THAILAND AND VIETNAM

Survey of Four Tributaries

United Nations Special Fund: Mekong Committee/Survey of Four Tributaries

Report by the United Nations
Department of Economic and Social Affairs
For the Period 1 January – 30 September 1964

SUMMARY

Tributary Projects

i) The Project Report for the Phum Leao damsite on the Battambang Tributary in Cambodia has been completed by SOGREAH. The report is now being reviewed by Cambodia, the Project Engineer and ECAFE.

ii) The Nam Ngum Tributary Project had been revised by Nippon Koei in the light of the suggestions made by the Advisory Board in its meeting held at Phnom Penh in November 1963. The Advisory Board visited the Nam Ngum damsite on 2 May 1964 and was most favourably impressed with the excellence of the site for a concrete dam. The Board concluded that the first stage of the Nam Ngum Tributary Project (20,000 KW power and 5,000 irrigation) is fully justified technically, economically and financially, and recommended early construction of the Project.

iii) Good progress was made on the construction of the Nam Ngum Tributary Project in Thailand. The foundation stone for the dam was laid by the Prime Minister of Thailand on Sunday 10 May 1964.

iv) Nippon Koei submitted an interim note on the progress of the Upper Se San Project in Vietnam for review by the Advisory Board in April 1964. The ultimate hydro-electric potential of the Upper Se San has been shown to be of the order of 600,000 KW, of which Yali Falls itself could generate 180,000 KW. The Engineer hopes to complete the Feasibility Report by the end of August 1964.

Agricultural Stations

v) The request for Kalasin Station in Thailand sponsored by the joint effort of the Thai Ministry of Agriculture, the Ministry of National Development, the FAO Regional Office, and the Office of the Committee's Executive Agent, has been approved by the Governing Council of the Special Fund. It is hoped that the draft may be available for negotiation sometime in late July or early August 1964.

/ vi)

vi) Cambodia has made a separate request for financing the construction and operation of an Agricultural Station in the Battambang area in Cambodia. This request is still under consideration of the Special Fund.

vii) The Special Fund has agreed to the extension of the agricultural pilot and experimental station in Laos by one year.

viii) At the end of January 1964, a formal request was submitted to the United Nations Special Fund for changing the location of the experimental and demonstration farm from the Upper Se San to the Eak-Mat Agricultural Station situated in the Upper Sre Pok Basin in Viet-Nam. The Special Fund agreed to shift the pilot project to Eak-Mat. Contour mapping at Eak-Mat Farm has been finished and planning of irrigation system has been taken in hand.

ix) Taking the Project as the whole, the progress up-to-date is considered very satisfactory indeed. It is hoped to bring the Project to a successful completion during 1964.

STATEMENT OF WORK DONE

i) Battambang Tributary Project in Cambodia

SOGREAH submitted the Feasibility Report for Battambang (Phum Leao site) during June 1964. Five copies in French were received in Bangkok on 17 June 1964; two of these copies were sent to Cambodia for scrutiny. Two copies in English are expected during July. The remaining 95 copies in French and 98 copies in English were dispatched by sea. These have since been received. Out of these, 24 copies in French have been sent to Cambodia and two copies to each of the other 3 countries.

/ The report

The report is still under detailed scrutiny by Cambodia, ECAFE, and the Project Engineer. Their comments will be sent when their scrutiny has been completed. The SOGREAH report is an excellent presentation of the project and undoubtedly is of a high professional standard.

The development project provides for the reclamation and drainage of about 80,000 hectares adjoining the chief town in the Province of Battambang. Four fifths of the area (that is, 68,000 hectares) is proposed to be brought under irrigation; the difference of 12,000 hectares is accounted for by unproductive soil, "phnoms" roads, villages and land covered by the various irrigation and drainage network structures. The irrigation water supplied will be diverted from the Stung Sangker by the Kantu dam after storage at the Phum Leao dam.

Extensive geological survey and investigations were carried out to dispel any doubts as to the water tightness of the reservoir basin before the Phum Leao damsite was finally selected. SOGREAH has recommended a two-stage building programme to be in keeping with the progressive development of the project.

The first stage contemplates building the dam upto a level of 70 metres. This will provide electric production for a peak output of 5,000 KW.

In the second and the final stage, the dam would be built up to 80 metres and the mean power available would amount to 19,000 KW. The Project recommends a stand-by steam power station with an installed capacity of 20,000 KW.

The total cost of the Project has been worked out as US$50.87 million, plus 1,420 million Riels. The cost of the first stage comprising the Kantu dam and the left bank area canal has been estimated as US$10 million and 364 million Riels.

/The report

The report ends by strongly recommending the development project as a worthwhile basis for the expansion of the agricultural and power resources of one of the most prominent provinces in Cambodia.

ii) Nam Ngum Tributary Project in Laos

Nippon Koei Ltd., designing and consulting engineers of Tokyo, submitted the Feasibility Report on the Multi-Purpose Nam Ngum Project in Laos during April for the consideration of the Advisory Board. This report included all the suggestions made by the Advisory Board of the Mekong Committee, the Project Engineer and others at various times.

The Nam Ngum Multi-Purpose Project envisages hydro-electric power generation, irrigation, flood control and navigation improvement by the construction of a 66 metres high concrete gravity dam. Power generation in the first stage would be limited to 20,000 KW and will ultimately be increased to 120,000 KW. Similarly irrigation in the first stage will be limited to 5,000 hectares and will be expanded to 32,000 hectares in course of time.

The cost of construction of the first stage of the Project is estimated as US$22.4 million, of which US$15.2 will be in foreign exchange and the remaining US$7.2 million in local currency. About US$2 million may be required to meet the interest charges during the construction period.

At its meeting held in early May 1964, the Advisory Board of the Mekong Committee reviewed in detail the estimates of cost. While the Board was of the opinion that these estimates appeared reasonable, it felt that the item for reserves and contingency might justifiably be increased.

/ The Board

The Board took into account the impact on the rest of the economy of this major effort in economic development, the possibilities for a rapid increase in the demand for power, following the availability of abundant power at reasonable cost, the stabilization influences of expanded opportunities for employment, the psychological advantages in bringing together various parties within the country, all of which are dedicated to the Project, and the opportunity this Project provides for co-operation with neighbouring countries within the Mekong Basin, including the possible export of power to Thailand. Taking all these considerations collectively into account and considering the feasibility of the Project itself over years, the Board recommended early construction of the Project as a contribution to the economy and stability of the country concerned as well as of the region.

Nippon Koei will now proceed with the final printing of the Feasibility Report. The United Nations agreed (Mr. Elms' letter of 24 April 1964, Amendment No.5) to extension of the termination date of the contract to 31 August 1964 as requested by the firm. The only work which remained to be done was the printing of the final Feasibility Report, 100 copies in English and the same number in French. These copies have since been received. Out of these, 24 copies in French have been sent to Laos and 2 copies to each of the other three countries.

iii) Nam Pong Tributary Project in Thailand

The Nam Pong Tributary Project in Thailand has made excellent progress under the Thailand North-East Electricity Authority (NEEA), which has been specially constituted for the construction of the Project.

The foundation stone was laid by H.E. Marshal Thanom Kittikachorn, the Prime Minister of Thailand, on 10 May 1964. The contract for the construction of civil engineering work was awarded to the Philipp Holzmann AG and the Siemens Bauunion for Baht 162 million on 23 January 1964.

/The Prime Minister

The Prime Minister, on this occasion, stated: "Nam Pong Dam is "part of the development of the Mekong River, which is under the auspices of "the United Nations. The United Nations initiated the survey and prepared "various feasibility reports with the help of many countries all over the world. "When the Project proved to be feasible, it was handed to the Thai Government "to carry on."

On this occasion, the Secretary General of the United Nations sent the following cable to H.E. the Prime Minister Thanom Kittikachorn and to the Chairman of the Mekong Committee, Dr. Boonrod Binson:

"On occasion of placing foundation stone for Pong Neeb Dam "on Sunday 10 May as first component project to reach physical "construction stage within overall Mekong scheme, I have great "pleasure on behalf of UNATIONS Family including ECAFE and "UNATIONS SPECFUND to convey warmest felicitations to your "Government. We in UNATIONS take modest pride in support we "have extended to Mekong Committee as an autonomous intergovernmental "organization under aegis of UNATIONS and in providing through "UNATIONS SPECFUND finance for Feasibility Report as first step "in preparation present Nam Pong/Pong Neeb Project. UNATIONS "reiterates its warm support of Mekong Committee as vehicle "through which riparian states Cambodia, Laos, Thailand and "Republic Viet-Nam seek major economic development for all peoples "of Lower Mekong Basin without distinction as to nationality or "politics. We greatly hope construction at Nam Pong which now "well underway will prove of great benefit for people of North-East "Thailand and equally will service as an encouraging example to "all riparian partners within Mekong Committee. Please accept, "Your Excellencies, the renewed assurances of our highest "considerations. Signed: U Thant."

/iv)

iv) Upper Se San Tributary Project in Vietnam

Nippon Koei continued investigations. The Project planning, design and evaluation were carried on at the Head Office of the firm. They expect that the Feasibility Report on the Upper Se San Project will now be completed by August 1964. This extension in the period of the contract to 31 August 1964 without in itself having any effect on the total contract price was agreed to by United Nations with Mr. Elms' Amendment No.1 of 4 March 1964. Nippon Koei submitted a note for discussion at the meeting of the Advisory Board held in April 1964. The firm reported that their subsequent investigations show that the Project area including the newly added South-West area of Pleiku has a very complicated topography, making it difficult to develop a large irrigation system. Nippon Koei have come to the conclusion that it would be advantageous to consider several small sectors of about 1,000 to 5,000 hectares by lift irrigation, obtaining cheap power from the proposed Yali Falls development.

As regards hydro-electric part, the Upper Se San has an ultimate potential of some 600,000 KW; Yali Falls itself could generate 180,000 KW. However, in the light of the present demand in this region, it is considered appropriate to develop the project by stages. The firm is proposing for the first stage development about 8,000 hectares for irrigation and 5,000 KW for power at a cost of something like US$10 million. Out of 8,000 hectares of proposed irrigation, 5,000 hectares would possibly be by gravity and 3,000 by pumping.

The field work was completed in August. Nippon Koei on 10 September 1964 handed over to the Government of Viet-Nam two cars with their accessories to be in their custody on behalf of the Mekong Committee.

A graph is enclosed showing the progress of expenditure from the inception of the project to the end of August 1964. A separate chart shows the percentage of work done under each head.

/ The firm

The firm hopes to submit 24 copies in English and the same number in French within 30 days after completion of the job in August, i.e. during the period of September 1964.

ANALYSES OF MAJOR PROBLEMS ENCOUNTERED

Survey of Four Tributaries

i) Five copies in French version of the Feasibility Report for Battambang project (Phum Leao Site) was received from SOGREAH during June 1964. Two copies in English specially requested by air are expected shortly. Remaining copies have been dispatched by sea. The report is now being examined by Cambodia, ECAFE and the Project Engineers. A claim of SOGREAH for US$13,800 for additional mapping is under consideration of the United Nations.

ii) A few advanced copies of the Feasibility Report for Nam Ngum Project in Laos were received from Nippon Koei Co. of Tokyo during April 1964 for review by the Advisory Board. The Advisory Board has enthusiastically recommended the construction of the first phase of the Project and it is hoped that the required funds for starting construction will be found under some financial arrangement. The firm hopes to send 100 copies in English and the same number in French of the final printed reports by August 1964. The firm's claim for US$2,500 for printing the additional copies is still under consideration of the United Nations.

iii) The work on Upper Se San in Vietnam was continued by the firm. The completion of the Feasibility Report will be delayed until end of August 1964. This delay will not involve the United Nations in any additional financial obligations.

/ GOVERNMENT

GOVERNMENT PARTICIPATION

i) Each of the participating Government assigned a Counterpart Manager to the respective Tributary Project. The Counterpart Manager had worked closely with the Project Manager of the contractors and the Project Engineer of the United Nations Special Fund, responsible for the work.

Counterpart personnel and facilities were provided by Governments to the contractors, as stipulated in their contracts. Contractors were generally satisfied with the contribution in kind made by the Governments.

EVALUATION - AS AT THE END OF REPORTING PERIOD

i) The position of the Project at the end of the period may be considered as very satisfactory. The Four Tributaries Survey Project was supposed to fade out on 29 February, and from 1 March, costs were to be transferred to the new Institutional Support Project, the savings being applied to the anticipated extension of the Laos Agricultural Station Project (Mr. Reedman's letter of 5 May 1964). This can be formally done, when the Plan of Operation for the Institutional Support Project has been signed by the parties concerned.

ii) The Nam Pong Project in Thailand is making very good progress. The foundation stone was laid by the Prime Minister of Thailand on 10 May 1964.

iii) The revised Feasibility Report on the Nam Ngum Project, Laos, was reviewed by the Laotian Authorities, the Advisory Board, ECAFE and the Chairman of the Mekong Committee; all of them have enthusiastically supported the construction of the first phase of the Project. The contract for this work will terminate on 31 August 1964 on receipt of the final printing copies of the Feasibility Report from the firm. In the meantime, the Mekong Committee,

/ with the

with the good offices of the United Nations, is exploring ways and means for financing the construction of this important project in the Mekong Basin.

iv) The Feasibility Report on the Battambang Project in Cambodia was received in June 1964 and is being scrutinized at present. With the completion of the scrutiny, the contract for this Project with SOGREAH will come to a successful termination. The Advisory Board has already supported the First Phase of this Project for construction.

v) The Upper Se San Tributary Project has been unavoidably delayed. The field work had been completed at the end of August 1964 and printed reports delivered in September 1964. The ultimate potential of the Project is much bigger than visualized previously. It has been learnt during recent discussions that the emphasis of Vietnam Government has now shifted to Upper Sre Pok Tributary area.

Agricultural Station

1. Cambodia - Pilot Station for Irrigated Agriculture, Battambang

On 21 January 1964, at a meeting held in Phnom Penh, the Government confirmed their interest in the project for establishing a pilot station for irrigated agriculture in the vicinity of Battambang.

The Managing Director of the United Nations Special Fund, recommended a Special Fund Project for a Pilot Station for a duration of 4 years at an estimated Special Fund contribution of US$551,300 and a Government counterpart contribution equivalent to US$500,000.

This project is to provide demonstration and training in methods of irrigated agriculture in the area to be developed by irrigation with water from the Battambang River. It consists of the study of the most effective utilization of the water to become available, first from the diversion dam and then from the major works proposed on the Battambang river, testing of modern methods of irrigated agriculture suitable for the area, research and demonstration on the diversification and rotation of crops and training of local personnel in the management of irrigation and in agricultural extension.

A fifteen hectare pilot station is planned bo be located about 7 km from the town of Battambang and will be surrounded by a demonstration perimeter of 300 ha.

2. Thailand - Experimental and Demonstration Farm for irrigated Agriculture, Kalasin

According to the meetings of the Consultative Board of February 1964 and of the Governing Council of 20 April 1964, a draft Plan of Operation was prepared and discussed and the final copies sent to the Special Fund and to the FAO Country Representative in Bangkok for negotiation and signatures on 30 October 1964.

/ The project

The project is of 4 year's duration and the Special Fund Allocation to this Project is estimated as US$321,100 a.d the Government Counterpart contributions is equivalent to US$277,904. This Project is to study how the water made available under the irrigation scheme can be best utilized, to test modern methods of agriculture, to conduct research and provide demonstrations on irrigated crop production and on the optimum diversification of cropping, to advice the Government on legislation and rules for water use and to train local personnel in all these fields.

The project will provide for the establishment of a 10 hectares irrigation farm and a demonstation area of 300 hectares, both of which will be provided with irrigation facilities from the existing Huey Si Thon tank nearby.

3. Vietnam - Eak-Mat Experimental and Demonstration Farm in Vietnam.

A formal request to the Special Fund for changing the location of the experimental and demonstration farm from the Upper Se-san to the Eak-Mat agricultural experimental station was sent by the United Nations TAB Regional Representative in the Far East on 23 January 1964.

After approval by the Special Fund, a new memorandum agreement between FAO and the Government was signed in April, which provides for a total allocation of US$38,000 for a preparatory survey of the physical conditions

/ of the area.

of the area. The topographical survey has been made by a private firm. The Cadastral and soil maps, the engineering design and the socio-economic study are being carried out by the Government technicians and FAO local personnel.

/ Laos

4.	Laos Vientiane Agricultural Station Operations authorized to commence on 16 January 1961	1 January through 30 September 1964 FAO

A. Summary of Project Operations

The experimental work previously developed to obtain pointers was intensified. Particular attention was given to recording and analysing data on consumption of irrigation water.

Irrigation network has been completed in the first zone of the pilot area and a start has been made on the construction of the canals in the second zone.

Demonstration and extension activities have been intensified and are alredy showing practical results. All data on results, experimental and crop and extension activities up to May 1964 were submitted as preliminary reports.

The Agricultural school has completed the first year of its two years course. The programs of study have been modified to suit local needs.

An extension of one year has been granted to this project.

B. Work done during Period under Review

(a) Experimental Station

During the period of report, experiments on 40 species and 118 varieties of crops were carried out and distributed over 178 plots. The water requirements of the various crops were controlled.

/ The results

The results obtained from cereals other than rice continued to maintain their promise. The yield from wheat was almost double that of last year, while maize, sorghum and durra yields continued to be of economic interest in view of the increased demands. Economic benefits of a second crop of rice still remains doubtful.

Experiments on cash crops confirmed previous year's results. However, most of these crops are not economical in the present situation as there are no marketing facilities. Tobacco is an exception, both the local and imported varieties yielded good results and were economical under irrigation.

Vegetables are much more economical as the produce is readily sold at a good price. Various legumes were tried as green manure. The yields were high and on the basis of the experiments relative rotations have been determined. It is possible to obtain two crops during the dry season.

Druing the rainy season, experiments were focussed on rice. Artificial seed drying was tried. Experiments on crops grown in the previous year were continued and measures were taken to ascertain irrigation water requirements for individual crops. The crops are in good condition and the experiments are in progress. Permeability tests on soils were carried out.

Rains have been particularly poor with 164 mm on the farm as against the minimum of 209 mm recorded at Vientiane during the same months in 12 years 1949/1960.

An evaluation of the results achieved during the previous seasons was submitted in the form of preliminary reports.

(b) Hydraulic works

The irrigation network in the first zone has now been completed by the construction of all canals and ancillary works. Construction of the canals in the second zone of the pilot area has commenced.

/ In the first

In the first zone, 10,761 meters of canals have been excavated and 27,274 cubic meters of earth was moved. 4 canal heads, 5 syphons, 146 locks, 6 bed drops, 6 turnout gates, 106 meters of lining on curves and 31 entrances to private properties were constructed. 5510 meters of roads were built. A motor pump was supplied by FAO for the first zone.

In the second zone, 3248 meters of canals were made involving excavation and 5,740 cubic meters of earth.

In order to improve technical facilities, a venturimeter was installed at the intake canal of the farm. Some alterations were made to the plot sizes of the experimental farm to allow for different irrigation solutions to be investigated.

(c) Demonstration and Extension

When the various canals of the first zone gradually came into operation, considerable interest was shown by the farmers in adopting new irrigated crops. A total of 54 farmers went in for irrigated crops, mainly vegetables, tobacco and fruit trees. It is worth mentioning that 4 farmers from outside the pilot area requested permission to use water from the canals of the project for irrigation and bore the cost of the necessary installations.

Seeds, fertilizers and pesticides were distributed to farmers. 446 kg of seeds to 29 farmers, 105 kg of fertilizers to 6 farmers and 59.7 kg of DDT to 46 farmers were distributed. 2183 bunches of rice seedling for an area of 3.50 hectares were also given.

(d) Training

Training of the 22 students at the school was somewhat thwarted by the lack of sufficient teaching personnel. Some substantial modifications were

/ made to

made to the syllabus as well as to the time-tales and subjects to suit the local needs.

(c) Government Participation

The Government participation in the project has been limited due to the political and economic situations. However, the Government has made available to the project a total credit of 20,026,820 Kips to overcome the financial problem of counterpart contribution.

c. Analysis of Major Problems

The sain problems experienced were as previously:

Shortage of technical personnel and local manpower due to ow wages (devaluation of the local currency), a very limited availability of heavy earth-moving machinery (in terms of number, time and efficiency);

a general lack of good quality needs for experimental and demostration work;

lack of Government funds during the first six months mainly due to the devaluation of the currency;

damage to crops by pests and diseases and lack of facilities for the treatment of seeds.

The Spedial Fund has granted an extension of this project by one year until November 1965. FAO has posted a Plant Protection Specialist to the project to deal with insects and pesticides. These measures should help to overcome the major problems to a great extent.

/ D. Evaluation

D. Evaluation

The programme of experimental crops is on schedule in spite of the lack of various facilities and manpower. Good progress was made in Hydraulic and irrigation works.

The progress of the Agricultural School suffered largely due to insufficient teachers. The demonstration and expension activities, although generally satisfactory, are behind schedule. Not withstanding one year's extension of the project, only restricted activity will be possible in the second zone.